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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,222	06/19/2006	Heinz Schicht	283892US0PCT	7864

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1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
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ROBINSON, LAUREN E

ART UNIT	PAPER NUMBER
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1794

NOTIFICATION DATE	DELIVERY MODE
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01/26/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/562,222	<b>Applicant(s)</b> SCHICHT ET AL.	
	<b>Examiner</b> LAUREN ROBINSON	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 7-8, 12-14, 16-21 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 7-8, 12-14, 16-21 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 11, 2009 has been entered.

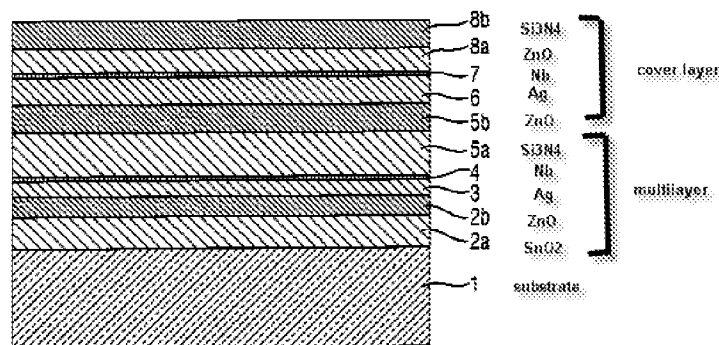
### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 7-8, 12-14, 16-21 and 23 are rejected under 35 U.S.C. 103(a) as being obvious over Boire et al. (US PN. 6,045,896) in view of Anderson et al. (US Pub. No. 2001/0031365).

**Regarding claims 1 and 21:** Boire et al. teach a composite product comprising a transparent substrate and a multilayer system and a cover layer as illustrated below..



As illustrated, the multilayer system is comprised of a functional layer, 3, and a layer C, 5a (abstract, Col. 5, lines 25-32). The functional layer provides the multilayer with a solar-control function by the layer reflecting solar radiation (abstract, Figures). As above, the layer C “5a” comprises silicon nitride and is surmounted by the cover layer.

Although the cover layer above comprises ZnOx, the reference teaches that each and any of these layers can be replaced with any oxides of the above zinc, tin, titanium, niobium, tantalum, aluminum, tungsten or even any mixtures of at least two of these. However, there is no teaching of an oxide of Zr with another metal as claimed although this would have been obvious for reasons below.

Specifically, Anderson et al. teach a transparent substrate with a solar control multilayer stack applied thereon (title). They illustrate that for metal oxide layers used therein, such as the above mentioned tantalum oxide, ZrO<sub>2</sub> is functionally equivalent (0036, 0051). Since Boire and Anderson disclose analogous inventions related to solar control stacks comprising oxide layers and Anderson illustrates that ZrOx can be used

in place of TaOx, one having ordinary skill would find such a use for ZrOx in the oxide layer of Boire to be obvious. As such, it would have been obvious to one having ordinary skill in the art at the time of invention to modify Boire to include that TaOx can be replaced with ZrOx to obtain similar antireflection properties.

Additionally, as ZrOx is used in place of TaOx, Boire's teaching will now include instead of the oxide layers being any mixture of at least two oxides of zinc, tin, titanium, niobium, **tantalum**, aluminum, tungsten, it would include any mixture of at least two oxides of zirconium, tin, titanium, niobium, **zirconium**, aluminum, tungsten. This will meet applicants' limitation because it allows for any or all oxide layers, such as 5b in the figure cover layer, to be ZnO, ZrOx, ZnZrOx, ZnSnOx, etc. .

The examiner notes that for the layers to be present in the order taught within the reference, one would recognize that a process of applying said layers would be necessarily present (**Claims 1 and 21**).

**Regarding claims 7 and 23:** As maintained above, the modified teaching will now allow for the oxide layers, such as 5b in the cover layer, to be ZnZrOx (**Claims 7 and 23**). **Regarding claim 8:** : Although Boire et al. are silent regarding the now included oxide layer being doped with one of the metals claimed in claim 8, this limitation would have been obvious.

For example, Anderson et al. additionally teach that such metal oxide layers, such as zinc oxide layers (which will include a mixed ZnZrOx from above) can be doped with metals such as Al to provide the stack with antistatic properties which is well known and desirable in the art (0054). As both Boire and Anderson disclose analogous

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inventions as maintained above, one having ordinary skill would further recognize that such a doping within Anderson would be beneficial in Boire. As such, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Boire et al. to include that the oxide layers of Boire are further doped with metals such as Al to obtain antistatic properties **(Claim 8)**.

**Regarding claim 12:** The oxide layer surmounting, covering and protecting the multilayer coat can have a thickness of 0.5 to 20nm (Col. 7, lines 30-35) **(Claim 12)**.

**Regarding claim 13:** Boire also teaches that the above layer C (Si<sub>3</sub>N<sub>4</sub>) can be a mixture of Si<sub>3</sub>N<sub>4</sub> and AlN (Col. 5, lines 25-31). Therefore, this Si<sub>3</sub>N<sub>4</sub> layer comprises another metallic element meeting applicants' claim 13 **(Claim 13)**.

**Regarding claim 14:** The Si<sub>3</sub>N<sub>4</sub> layer C layer can have a thickness of between 20 and 50nm (Col. 5, lines 38-41) **(Claim 14)**.

**Regarding claim 16:** Also, the functional layer within the reference is the above Ag layer (Col. 3, lines 30-35) making the layer metallic based and meeting applicants' claim **(Claim 16)**.

**Regarding claim 17:** The reference teaches that the final layer such as the Si<sub>3</sub>N<sub>4</sub> layer in the figure above can preferably be replaced by ZnO/Si<sub>3</sub>N<sub>4</sub>/ZnO **(Claim 17)**.

**Regarding claim 18:** Also, Boire teaches that in a stack as illustrated, the SnO<sub>2</sub>/ZnO sequence (2a and 2b) can be replaced by a Si<sub>3</sub>N<sub>4</sub>/ZnO (Col. 8, lines 9-12) and any of the Si<sub>3</sub>N<sub>4</sub>, which includes layer 5a in the above figure, can be replaced by a sequence of ZnO/Si<sub>3</sub>N<sub>4</sub> (Col. 8, line 1). From this and along with the above modification of claim

1, a sequence of Si<sub>3</sub>N<sub>4</sub>/ZnO/Ag/ZnO/Si<sub>3</sub>N<sub>4</sub>/cover layer (ZrO<sub>x</sub> with an additional metal) is allowed (**Claim 18**).

**Regarding claims 19-20:** The taught composite forms a glazing (**Claim 20**) assembly and maintains its properties after heat treatment (abstract) (**Claim 19**).

### ***Response to Arguments***

Applicant's arguments filed December 11, 2009 have been fully considered but they are not persuasive.

Applicants argue that Boire does not disclose the cover layer including an oxide of Zr with an additional metal.

However this is not persuasive because as included in the above office action, the limitation is met using the combination of Boire and Anderson.

Applicants argue that the combination of Boire and Anderson does not teach the cover layer including an oxide of Zr with an additional metal. They support this by arguing that while the examiner cited Anderson for teaching ZnTiO<sub>x</sub> that is doped or ZrO<sub>2</sub> with another metal that is doped, Anderson does not disclose a composite product including a cover layer of at least an oxide of Zr and one other metal.

This is not persuasive because first, as argued by applicants, the examiner citing in the previous action that Anderson teaches ZrO<sub>2</sub> with an additional metal that is doped still overcomes the deficiencies of Boire and meets the claimed limitation.

Secondly, although Anderson does not disclose the overall composite product as claimed and argued by applicants, this is not persuasive because Anderson was only used to illustrate functional equivalence for such an oxide and the benefit of doping in

Boire. Anderson was in no way meant to teach the overall composite. As it was mentioned above that Anderson does disclose functional equivalence of using ZrOx in place of oxides used in Boire the combination illustrates that ZrOx can be used for at least one of the oxides in Boire. Further, since it acts equivalently to such an oxide and Boire teaches that such an oxide can be mixed with other metallic oxides, it would be obvious to use the ZrOx in combination with the other taught oxides therein similarly to the oxide the ZrOx replaced. As such, this allows for ZrOx to be used with additional metallic oxides (other metal), the argument is not persuasive and the limitation is met.

### ***Conclusion***

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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Examiner, Art Unit 1794

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Primary Examiner, Art Unit 1794